Ministry of Economic Development
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PCT/NZ2005/000039

CERTIFICATE

This certificate is issued in support of an application for Patent registration in a country outside New Zealand pursuant to the Patents Act 1953 and the Regulations thereunder.

I hereby certify that annexed is a true copy of the Complete Specification as filed on 28 April 2004 with an application for Letters Patent number 532620 made by HABODE IP LIMITED.

Dated 16 March 2005.

Neville Harris
Commissioner of Patents, Trade Marks and Designs

COMMISSIONER OF PATENTS, TRADEMARKS & DESIGNS
NEW ZEALAND

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532620

Patents Form No. 5

THE PATENTS ACT 1953

COMPLETE SPECIFICATION

A BUILDING CONSTRUCTION

I/We, **HABODE IP LIMITED**, a New Zealand company, having its registered office at Kendons Chartered Accountants, 69 Rutherford Street, Lower Hutt, New Zealand, hereby declare this invention for which I/we pray that a patent may be granted to me/us, and the method by which it is to be performed, to be particularly described in and by the following statement:

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TITLE

A Building Construction

FIELD OF INVENTION

This invention relates to a building construction. A particularly preferred form of the invention relates to a building construction which is at least initially transportable and substantially in the shape of a freight container, and which can be assembled to provide a shelter, for example a dwelling.

BACKGROUND

It is known to manufacture dwellings in a substantially complete form, except for connections to services, so that they can be transported by a large road vehicle, for example a truck, to a desired site. A problem with such dwellings is that it is often impractical to freight them long distances such as from one country to another. It is accordingly an object of at least one form of the present invention to go at least some way towards addressing this problem, or to at least provide the public a useful choice.

SUMMARY OF THE INVENTION

According to one aspect of the invention there is provided a building construction having a main portion, a roof portion, and a floor portion, the roof portion and the floor portion each being attached to the main portion by way of a respective pivot connection or connections, the building construction being formed such that the main portion, the roof portion and the floor portion can be arranged with respect to one another such that the building construction is substantially in the shape of a box-like freight container in which the roof portion and/or the floor portion provide(s) structural integrity, the structural

integrity being such that the building construction can be picked up by a crane, and/or arranged in/on a freight vehicle with a normally loaded freight container on top of it, in either case without causing structural damage to the building construction, and wherein the building construction can be, after being freighted to a desired site, assembled by swinging the roof portion out from the main portion, and by swinging the floor portion out from the main portion, not necessarily in that order, but in each case by way of the pivot connections, such that the roof and floor portions become at least part of the roof and floor of the building construction respectively when the building construction is installed on site.

Optionally there is a second roof portion and a second floor portion arranged and able to function in similar fashion to the first mentioned roof and floor portions but at an opposite side of the main portion to the first mentioned roof and floor portions.

Optionally the building construction has locking means for the floor and wall portions such that they can each be locked in a substantially vertical orientation when the building construction is in a disassembled state for freighting.

Optionally the roof portion or portions can be outside of the respective floor portion or portions, as the case may be, when the building construction is in a disassembled state.

Optionally the floor portion or portions can be outside of the respective roof portion or portions, as the case may be, when the building construction is in a disassembled state.

Optionally the building construction is, when in a disassembled state, substantially in the shape of a standard freight container, for example an ISO container.

Optionally the ISO container is a 40 foot container.

Optionally the building construction has, when in a disassembled state, a removable corner protector arranged over at least part of an external edge of the disassembled construction to provide a measure of protection and/or strength to the construction when it is being transported.

Optionally the building construction has a plurality, eg four, removable corner protectors each arranged along a different external edge of the disassembled construction to provide a measure of protection to the construction when it is being transported.

Optionally the building construction includes framing and panels, and wherein the panels can be fitted between parts of the framing to create internal and/or external walls.

Optionally the structural integrity is such that the building construction can, when in a disassembled (eg un-erected state), be picked up by the crane at or adjacent four corners of the building construction without causing structural damage to the building construction.

Optionally the building construction is at least partially clad when in a disassembled (eg un-erected) state.

According to a further aspect of the invention there is provided a building construction having a main portion, a roof portion, and a floor portion, the roof portion and the floor portion each being attached to the main portion by way of a respective pivot connection

or connections, the building construction being formed such that the main portion, the roof portion and the floor portion can be arranged with respect to one another such that the building construction is substantially in a disassembled box-like shape which can be freighted to a desired site, the building construction being formed such that when it is on site it can be assembled by swinging the roof portion out from the main portion, and by swinging the floor portion out from the main portion, not necessarily in that order, but in each case by way of the respective pivot connections, such that the roof and floor portions become at least part of the roof and floor of the building construction respectively when the building construction is installed on site, the building construction being formed such that when the roof portion is swung out to an installed position by way of its pivot connection the position of contact between the roof portion and the main portion is inherently covered by the roof portion to substantially assist in resisting rain water entering the building construction when the building construction is completely installed. In this aspect of the invention the building construction may incorporate any or all of the other features, abilities, and arrangements mentioned previously.

References to a building construction and/or to a dwelling as used herein should not, without more, be taken as implying only an installed arrangement of the construction or dwelling. The terms may refer to the building construction or dwelling when in an assembled or a disassembled state. Further, the terms should not be taken as limited to only a package of all of the parts normally used in a building construction or dwelling.

DRAWINGS

Some preferred forms of the invention will now be described by way of example and with reference to the accompanying drawings, of which:

Figure 1 is a perspective view of a dwelling in accordance with the present invention

Figure 2 is an alternative perspective view of the dwelling,

Figure 3 is a skeletal perspective view of part of the dwelling when in a disassembled state,

Figure 4 is a skeletal perspective view of part of the dwelling when in a partially assembled state,

Figure 5 is also a skeletal perspective view of part of the dwelling when partially assembled, but at a more advanced stage of assembly than in figure 4,

Figure 6 is a conceptual end view of part of the dwelling when in a disassembled state,

Figures 7 and 8 are end views detailing various stages in the assembly of the dwelling,

Figures 9 and 10 are end views detailing more advanced stages in the assembly of the dwelling, and

Figure 11 is a perspective view showing a 40 foot container loaded on a road vehicle to demonstrate the general dimensions of the dwelling when in a completely disassembled state.

DETAILED DESCRIPTION

Figures 1 and 2 show a dwelling according to a preferred embodiment of the invention. Referring to figures 3, 4 and 5, the disassembled (eg un-erected) dwelling is generally box like and is substantially in the dimensions of a standard 40 foot freight container. The dwelling has a central framework 1 to which are attached two roof sections 2 and two floor sections 3 such that one roof and one floor section is either side of the central framework 1. Referring to figures 4 and 5, installation of the dwelling involves swinging the roof sections 2 outwards and upwards and swinging the floor sections 3 outwards and downwards. The swinging motion is in each case facilitated by pivot connections 4 between the central framework on the one hand and the roof and floor sections on the other. Preferably each roof or wall section 2 and 3 has a plurality of the pivot connections 4 spaced between each end thereof.

The manner in which the roof and floor sections 2 and 3 swing outwards with respect to the central framework 1 is further demonstrated between figures 6, 7 and 8. Figure 6 shows the dwelling in a disassembled state with the roof sections 2 in each case arranged outside their respective floor sections 3. While this is the preferred disassembled state, in alternative embodiments the floor sections may be outside their respective roof sections. Figure 7 shows the roof sections 2 being swung towards an assembled (eg erected) position by way of the respective pivot connections 4. The movement of the roof sections 2 is demonstrated at 2a and 2b. Figure 8 shows similar

movement of the floor sections 3, but downward. The movement of the floor sections 3 is demonstrated at 3a and 3b.

Figure 9 shows a more advanced stage of assembly of the dwelling with vertical beams 5 secured at the extremities of the roof and floor sections. These beams provide support for the roof sections 2 and serve to fix these against movement with respect to the floor sections 3.

Figure 10 shows a further advanced stage of assembly, wherein exterior wall panels 6 and windows 7 are fitted to assist in weather proofing the interior of the dwelling. Internal wall panels or partitions may also be fitted to divide up the interior of the dwelling into rooms as desired. Referring to figures 4, 5, 6, 7 and 8, the dwelling may have some permanent internal walls 8 which assist in providing structural integrity.

Optionally, interior building components, for example joinery, floor coverings, wall linings, windows, doors, and exterior claddings are contained within the central framework 1 when the dwelling is in a disassembled state. In a preferred embodiment of the invention internal walls, internal and external doors, and windows, etc, can be positioned to suit the end user's requirements, for example to compliment services or to maximize exposure to natural light, etc.

A benefit of at least some embodiments of the invention is that the dwelling can be readily transported to a desired site, installed, and connected to services, all with minimal effort and relatively low cost. By manufacturing the dwelling such that it is substantially in the shape of a standard freight container, for example an ISO 40 foot container, the dwelling may be shipped as part of a standard stack of containers. By

manufacturing the dwelling to match the size of a standard freight container the disassembled dwelling can be readily loaded and unloaded by way of lifting devices, for example cranes, designed for such containers.

Those skilled in the art will appreciate that a freight container, for example an ISO 40 foot container as shown in figure 11, must be of sufficient structural integrity to withstand the weight of other containers stacked on top of it such as in a container ship. Preferably the dwelling can take the weight of an ISO 40 foot container when loaded to the maximum allowable weight for such a container under international standards. It will also be appreciated that the container should have sufficient strength to withstand the loading inherent on its structure when it is picked up by a container crane. For example, if a container has insufficient strength then when it is picked up by its end parts, or at only a few contact points, it may buckle or incur other damage.

Freight containers typically have six sides, each formed from sheet steel or the like. These sides contribute significant strength to the overall structure and enable the container to withstand the forces on it when lifted or placed beneath one or more other containers in a stack. The dwelling shown in the accompanying drawings is designed to facilitate open plan living and, referring to figure 5, it can be seen that the basic structure, when assembled, does not have permanent longitudinally running walls at the sides (ie at positions 9) of the central framework 1. To enable the dwelling to withstand the normal forces on a container use is made of the two wall sections 2 and the two floor sections 3. When these are in a disassembled state, ie as per figures 3 and 6, they are in vertical alignment in the vicinity of position 9 and thus act as structural walls for the disassembled dwelling. To assist with this the wall and floor sections 2 and 3 can be locked at distil parts thereof in the vertical disposition for freighting.

Referring to figure 9, the dwelling preferably has longitudinal corner castings 10 which can be fitted to the longitudinal sides of the disassembled dwelling. These provide a measure of protection and/or strength to the dwelling during freighting.

Referring to figure 10, the dwelling is preferably formed such that when it is installed the angle between vertical corners of the central framework and the associated roof sections is approximately 110° in each case. This assists in the creation of a more spacious feel to the interior of the dwelling, and if the angle is greater then the feeling of spaciousness will be further enhanced. With further reference to figure 10, the pivot connections between the roof sections 2 and the central framework 1 are positioned such that when the roof sections 2 are in an installed disposition they cover the points where the roof structures 2 meet the central framework 1. This assists in weather proofing the dwelling.

Referring to figures 1 and 2, it can be seen that in the assembled dwelling a deck area may be fitted in front of at least one of the floor sections. In alternative embodiments decking may be fitted to both sides of the dwelling.

Preferably the central framework 1 and the wall and floor sections 2 and 3 are formed from a suitable metallic substance, for example steel, although alternative materials may be used provided that they impart sufficient overall strength.

In some alternative embodiments of the dwelling there may be only one pivoting roof and floor section 2 and 3. In such embodiments the opposite side of the central framework may have a permanent longitudinal structural wall.

While some preferred forms of the invention have been described by way of example it should appreciated that modifications and improvements can occur without departing from the scope of the appended claims.

WHAT WE CLAIM IS:

1. A building construction having a main portion, a roof portion, and a floor portion, the roof portion and the floor portion each being attached to the main portion by way of a respective pivot connection or connections, the building construction being formed such that the main portion, the roof portion and the floor portion can be arranged with respect to one another such that the building construction is substantially in the shape of a box-like freight container in which the roof portion and/or the floor portion provide(s) structural integrity, the structural integrity being such that the building construction can be picked up by a crane, and/or arranged in a freight vehicle with a normally loaded freight container on top of it, in either case without causing structural damage to the building construction, and wherein the building construction can be, after being freighted to a desired site, assembled by swinging the roof portion out from the main portion, and by swinging the floor portion out from the main portion, not necessarily in that order, but in each case by way of the pivot connections, such that the roof and floor portions become at least part of the roof and floor of the building construction respectively when the building construction is installed on site.

2. A building construction according to claim 1, wherein there is a second roof portion and a second floor portion arranged and able to function in similar fashion to the first mentioned roof and floor portions but at an opposite side of the main portion to the first mentioned roof and floor portions.

3. A building construction according to claim 1 or 2, wherein the building construction has locking means for the floor and wall portions such that they can each

be locked in a substantially vertical orientation when the building construction is in a disassembled state for freighting.

4. A building construction according to claim 1, 2 or 3, wherein the roof portion, or if appropriate roof portions, can be outside of the respective floor portion, or if appropriate floor portions, when the building construction is in a disassembled state.

5. A building construction according to any one of the preceding claims, wherein the floor portion, or if appropriate floor portions, can be outside of the respective roof portion, or if appropriate roof portions, when the building construction is in a disassembled state.

6. A building construction according to any one of the preceding claims, wherein the building construction is, when in a disassembled state, substantially in the shape of a standard freight container.

7. A building construction according to any one of the preceding claims, wherein the building construction is, when in a disassembled state, substantially in the shape of a standard ISO freight container.

8. A building construction according to any one of the preceding claims, wherein the building construction is, when in a disassembled state, substantially in the shape of a standard ISO 40 foot freight container.

9. A building construction according to any one of the preceding claims, wherein the building construction has, when in a disassembled state, a removable corner protector arranged over at least part of an external edge of the disassembled construction to

provide a measure of protection and/or strength to the construction when it is being transported.

10. A building construction according to any one of the preceding claims, wherein the building construction has a plurality of removable corner protectors each arranged along a different external edge of the building construction to provide a measure of protection and/or strength to the building construction when it is being transported.

11. A building construction according to any one of the preceding claims, including framing and panels wherein the panels can be fitted between parts of the framing to create internal and/or external walls.

12. A building construction according to any one of the preceding claims, wherein the structural integrity is such that the building construction can, when in a disassembled state, be picked up by the crane at or adjacent four corners of the building construction without causing structural damage to the building construction.

13. A building construction according to any one of the preceding claims, wherein the building construction is at least partially clad when in a disassembled state.

14. A building construction having a main portion, a roof portion, and a floor portion, the roof portion and the floor portion each being attached to the main portion by way of a respective pivot connection or connections, the building construction being formed such that the main portion, the roof portion, and the floor portion can be arranged with respect to one another such that the building construction is substantially in a disassembled box-like shape which can be freighted to a desired site, the building construction being

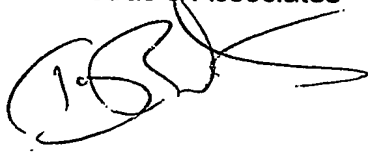
formed such that when it is on site it can be assembled by swinging the roof portion out from the main portion, and by swinging the floor portion out from the main portion, not necessarily in that order, but in each case by way of the respective pivot connections, such that the roof and floor portions become at least part of the roof and floor of the building construction respectively when the building construction is installed on site, the building construction being formed such that when the roof portion is swung out to an installed position by way of its pivot connection or connections the position of contact between the roof portion and the main portion is inherently covered by the roof portion to substantially assist in resisting rain water entering the building construction when the building construction is completely installed.

15. A building construction substantially as herein described with reference to figures 1-10.

HABODE IP LIMITED

By Its Attorney

A.J. Pietras & Associates



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FIGURE : 1

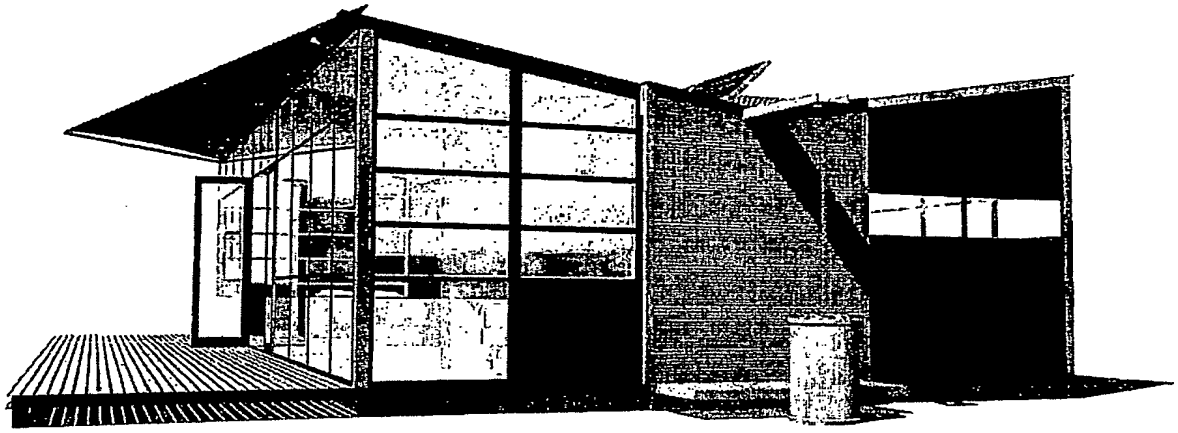


FIGURE : 2

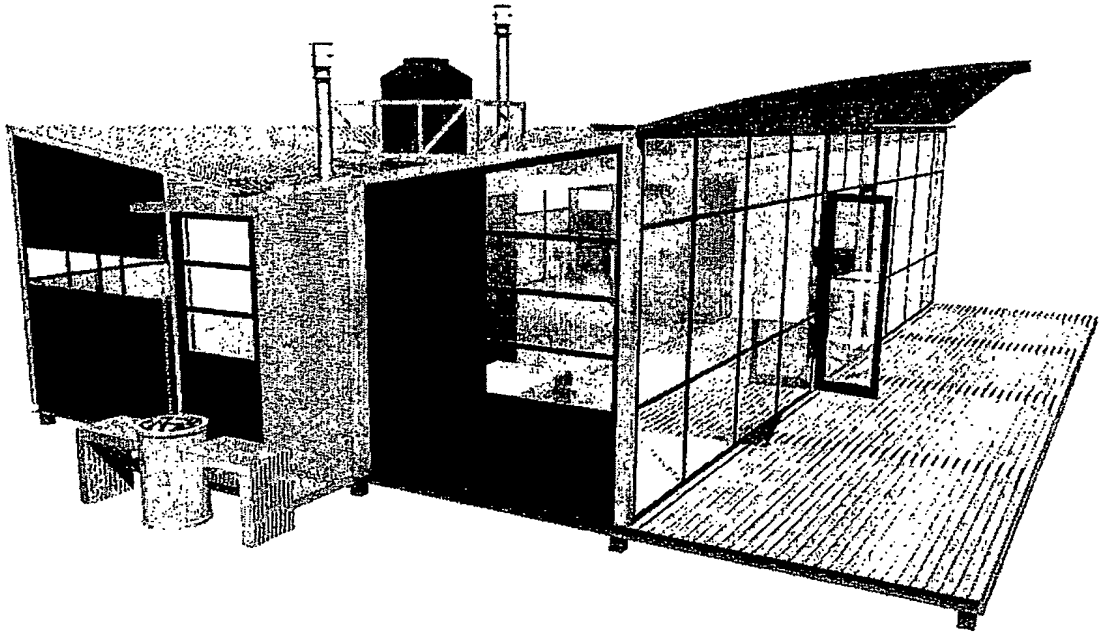


FIGURE : 3

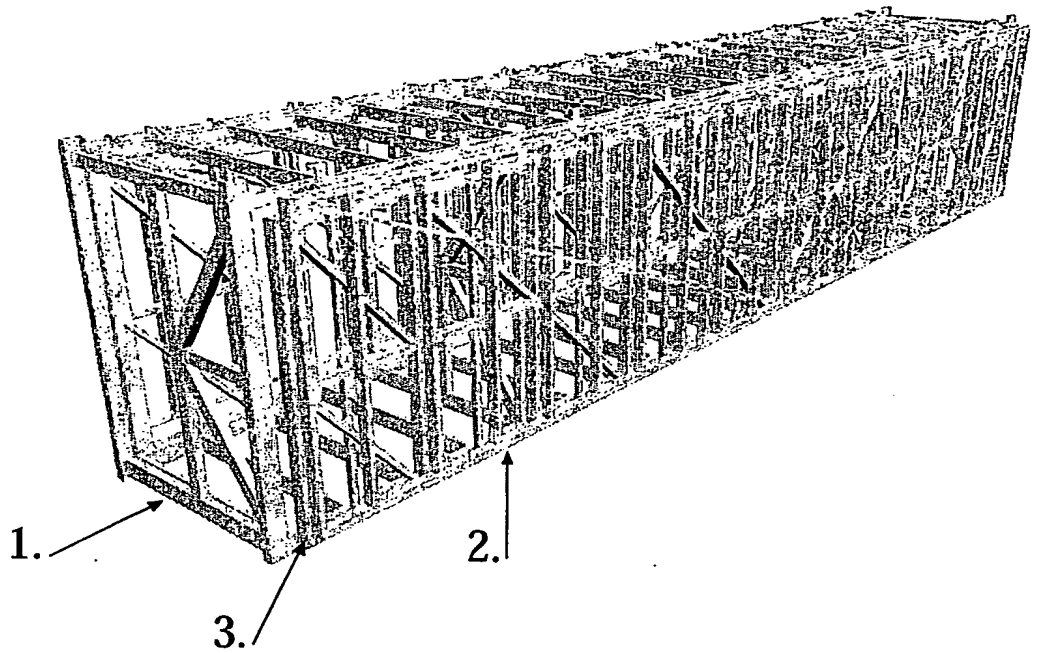


FIGURE : 4

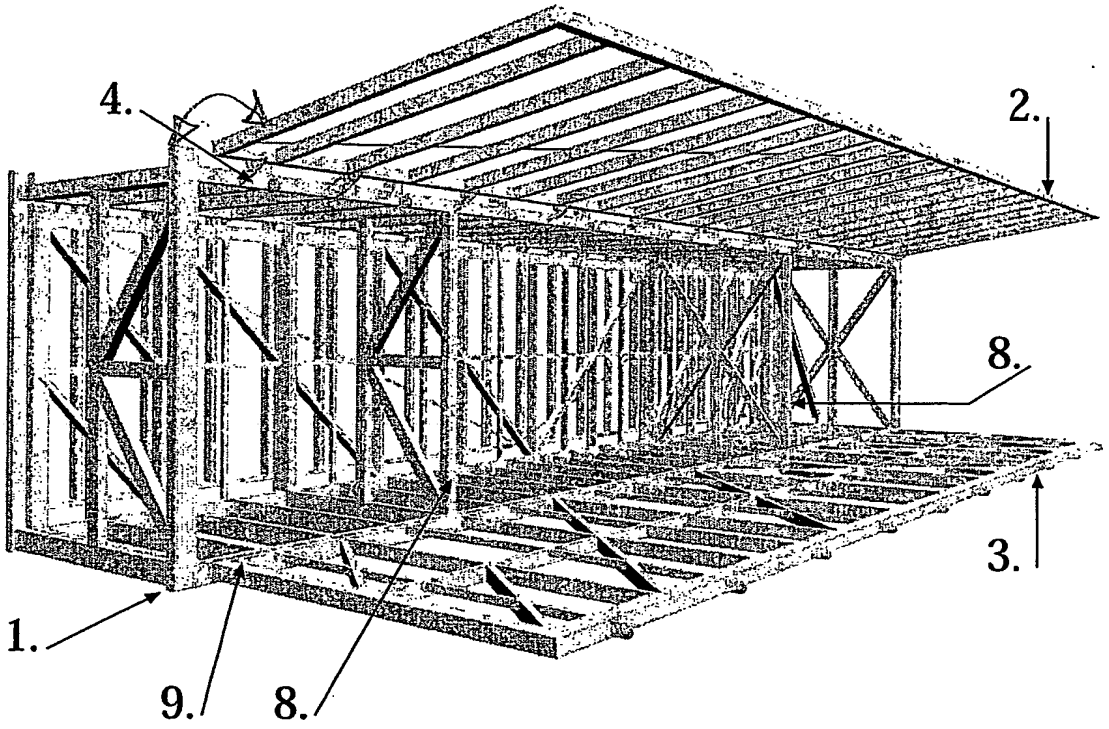


FIGURE : 5

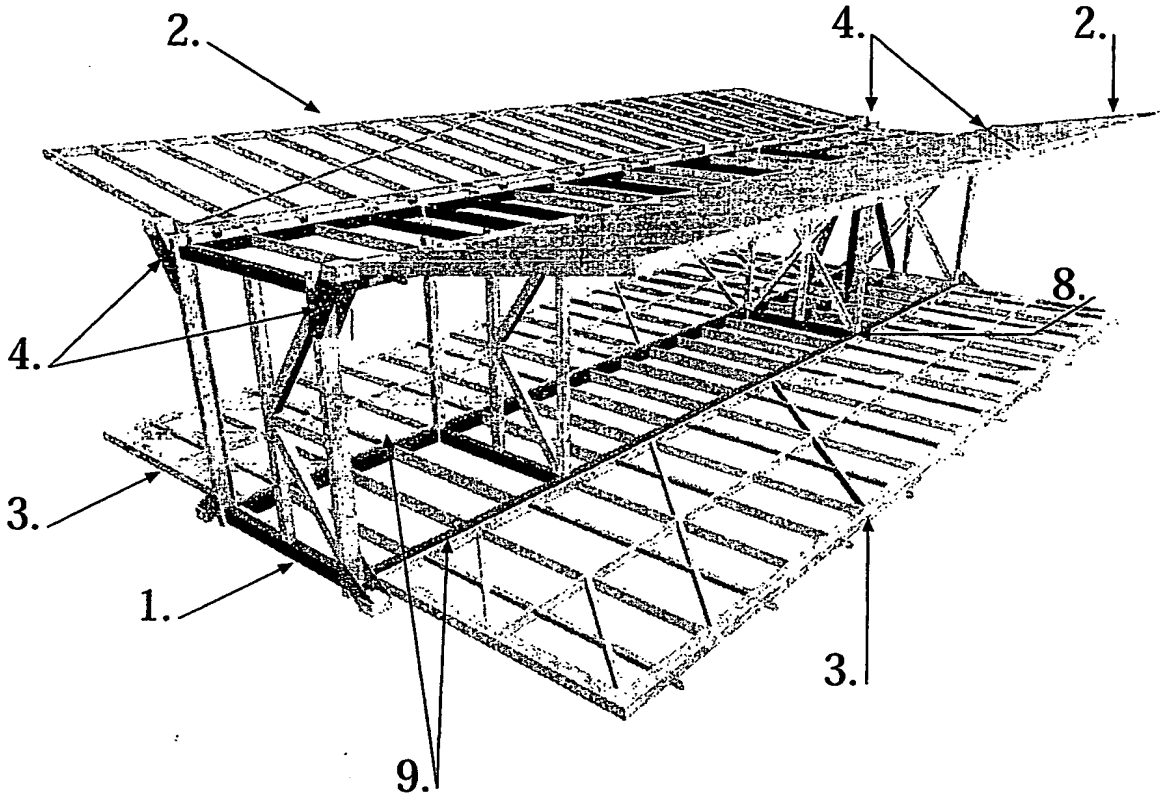


FIGURE : 6

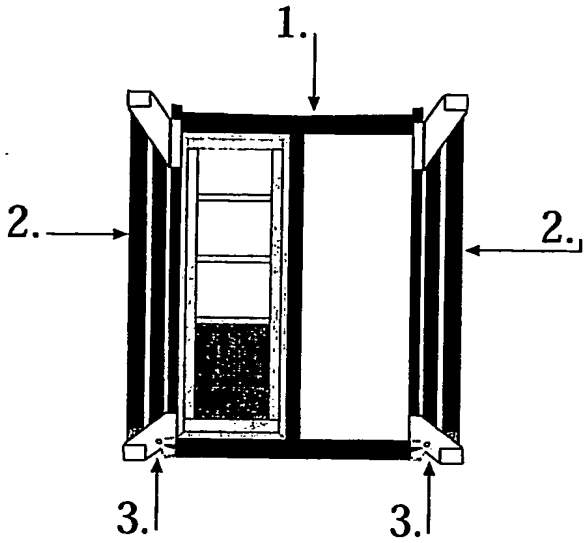


FIGURE : 7

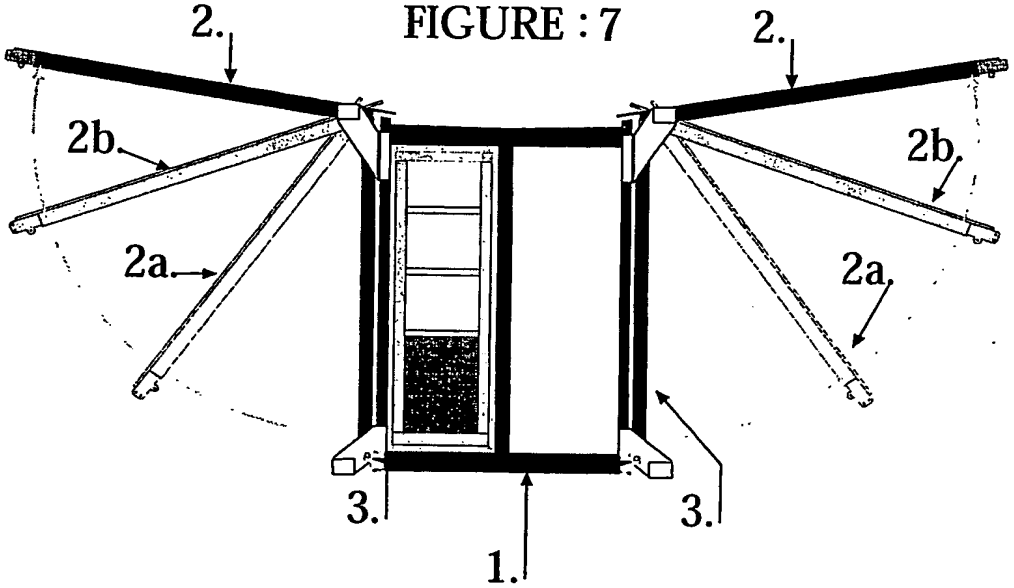


FIGURE : 8

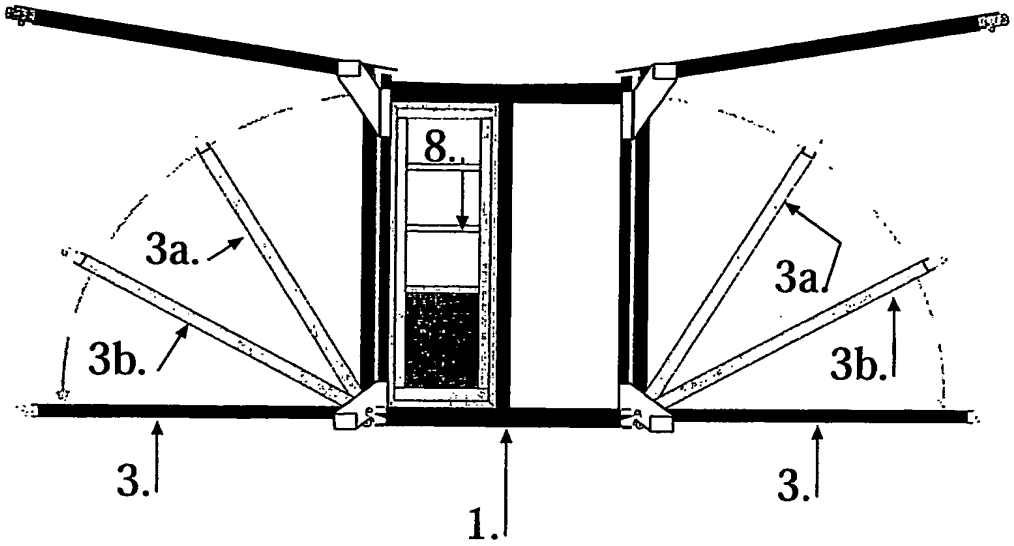


FIGURE : 9

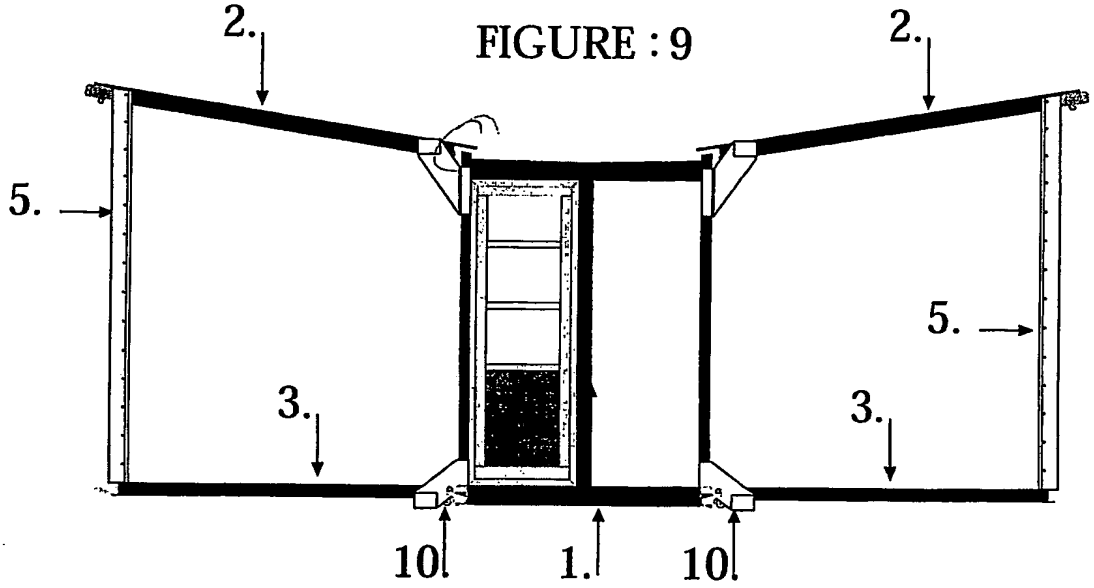


FIGURE : 10

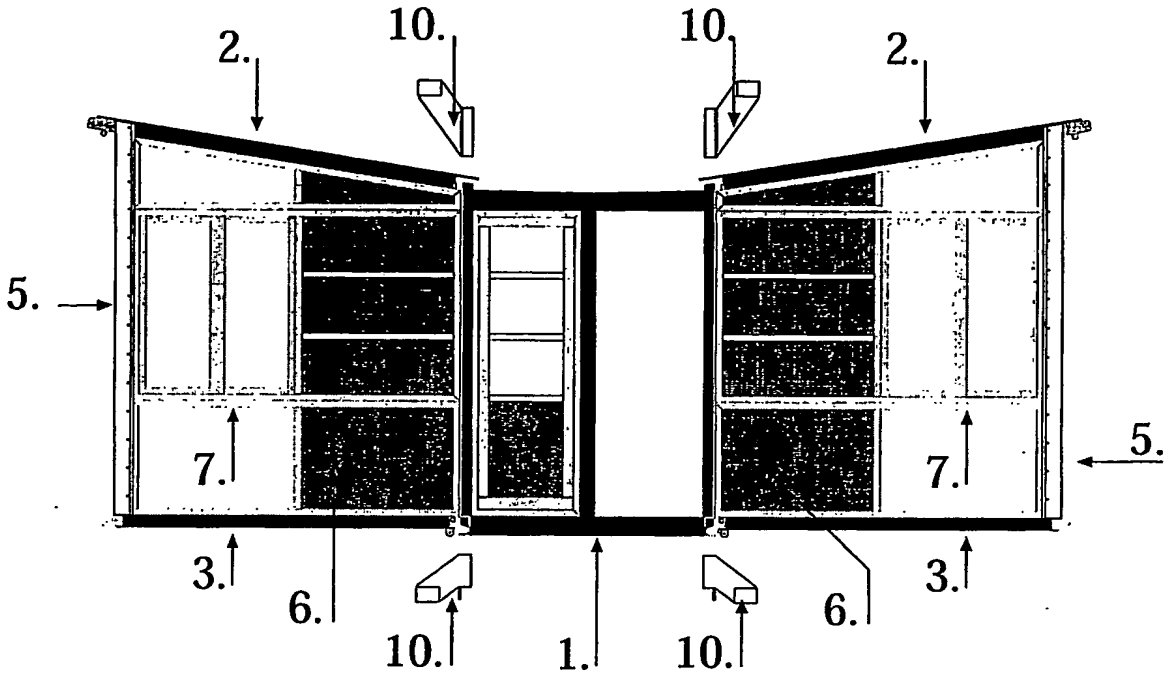
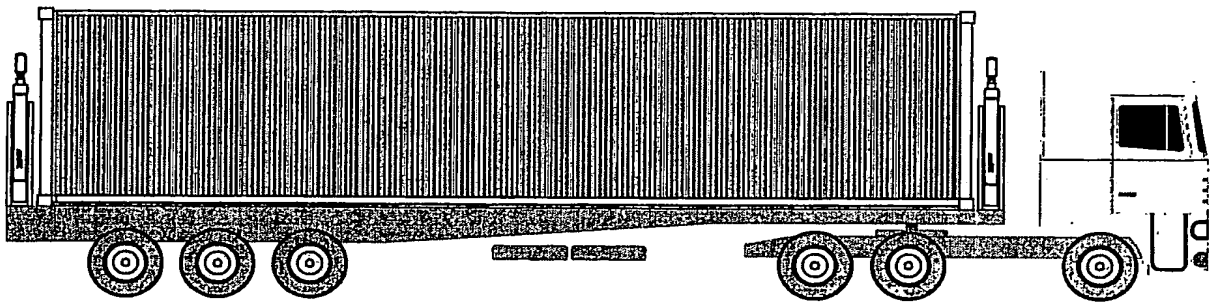


FIGURE : 11



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